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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/670,855	09/26/2000	John Michael Brown	20206-081 (TA-490)	6646

7590

07/02/2003

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EXAMINER

WHITTINGTON, ANTHONY T

ART UNIT	PAPER NUMBER
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2133

DATE MAILED: 07/02/2003

12

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary

Application No.

09/670,855

Applicant(s)

BROWN, JOHN MICHAEL

Examiner

Anthony T Whittington

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 May 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 9 is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other:

Response to Amendment

Allowable Subject Matter

Regarding claim 9, the prior art of record neither singularly nor in combination teaches the added limitation: "operating a third clock to control a latch...the follow state being experienced outside the time period". Therefore, claim 9 is allowable over the prior art of record.

Response to Arguments

Applicant's arguments filed 5-20-03 have been fully considered but they are not persuasive.

The Examiner has reconsidered the claims and concluded that the prior art of record teaches the claimed inventions as earlier presented in the first office action (See paper 8).

Regarding claims 1,5 and 6, the Applicant contends that Ruparel does not teach deterministic testing and a latch in the scan data path found in the Applicant's argument on page. 11, paragraphs 2 and 3.

The Examiner disagrees and asserts that the prior art of record (Ruparel) teaches a method and circuit for deterministic that comprises all the elements of the instant application. Ruparel teaches a deterministic testing scheme according to the Applicant's specification page 1, lines 11-15. As stated on page 1, lines 11-15 of the specification: "it should be evident to those skilled in the art that a hallmark of scan testing is that the test be deterministic... This means that a proper operating circuit will produce the same result when tested, regardless of the operating conditions, as long as the conditions are within predetermined parameters". Ruparel teaches a deterministic testing scheme (design-for-test) in column 1, lines 22-29 that states: "design-for-

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test technique...can be controlled and observed (produce the same result when tested)...scan design practices are built...value of all the latches...controlled to specific values and observed with a straight forward operation". Furthermore, Ruparel provides the capability to force states at any node and to similarly be able to observe the state in any node with in the scope of the Applicant's definition for deterministic testing in column 1, line 67 through column 2, line 1. Ruparel teaches a latch in the scan data path in column 3, lines 5-11: "These scannable D-flip-flop circuits are then connected in series"(a latch in the scan data path). Ruparel teaches two edge-triggered devices (41a, 43a) clocked by respective clock signals (CK, SCK, two clock domains) in Figure 7. Therefore, due to the clarification that all the elements are taught it is clear that Ruparel teaches all the elements of claims 1, 5 and 6.

Regarding claim 2, the Applicant contends that Ruparel does not teach multiplexors for selectively forming the scan path found in the Applicant's argument on page 12, paragraphs 2.

The Examiner disagrees and asserts that the prior art of record (Ruparel) teaches a multiplexors for selectively forming the scan path in column 2, lines 47-50: "The most widely adopted scan technique...is the mux-type-scan-D-flip-flop...in which a multiplexor is used in conjunction with a D-flip-flop". Thus, claim 2 remains rejected under the same grounds as before (See paper 8).

Regarding claims 3 and 4:

In view that the rejection of claims 1 and 2 are still maintained, claims 3 and 4 remain rejected under the same ground as before (See paper 8).

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Regarding claims 7 and 8, the subject matter of claims 7 and 8 are similar in scope with claims 1, 5 and 6. Therefore, claims 7 and 8 are rejected under similar reasoning of rejected claims 1, 5 and 6.

The previous rejection is maintained. The following is the previous rejection:

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-6 are rejected under 35 U.S.C. 102(b) as being anticipated by Ruparel (U.S. 5,689,517).

As per claim 1, Ruparel teaches a digital circuit having at least first and second edge-triggered devices with first and second clock signals that includes all the elements of the instant application. Ruparel teaches the first and second edge-triggered devices (latch 11, latch 12) with first and second clock signals (CLK A, CLK B) in Figure 1a. Ruparel teaches a latch (latch ,12a) in the scan data path that is equivalent to the instant application in Figure 1b.

As per claims 2, 3, and 4, Ruparel teaches multiplexer circuits (21a, 21b) for selectively forming the scan data path in response to a test signal (Data-in, SE) in Figure 2b. Ruparel teaches the first and second devices (latch 11, latch 12) form functional circuits in absence of the test

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signal in Figure 1a. Ruparel teaches the first and second clock signals (CK, ~CK) are asynchronous to one another in Figure 6a.

As per claim 5, Ruparel teaches a digital circuit subject to scan testing that comprises all the elements of the instant application. Ruparel teaches a scan data input (SCAN-IN), scan data output (SCAN-OUT), at least first and second clock domains (10a-10c), and a latch (latch 12a) in a scan data path portion that is clocked by the second clock (CLK B) in Figure 1b. Ruparel teaches a selectable data path in response to a test signal (Data-in, SE) in Figure 2b.

As per claim 6, Ruparel teaches a method of scan testing digital logic that comprises all the elements of the instant application. Ruparel teaches the first and second edge-triggered devices (latch 11, latch 12) with first and second clock signals (CLK A, CLK B) in Figure 1a. Ruparel teaches the step for providing a latch element (latch, 11 a) in the data path clocked by a test clock and asserting a test signal (SCAN-IN) to cause at least one serial scan chain to be formed in Figure 1b. Ruparel teaches operating the first, second (CLK A, CLK B, Figure 1b), and test clock signal (SYSTEM_CLOCK, Figure 6a) to cause the scan chain to receive test data in Figure 2b.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following patents are cited to further show the state of art with respect to edge triggered logic testing in general:

U.S. Pat No. 5,719,878 to Yu et al.

U.S. Pat No. 5,602,855 to Whetsel, Jr.

U.S. Pat No. 5,631,911 to Whetsel, Jr.

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U.S. Pat No. 5,383,143 to Crouch et al.

U.S. Pat No. 5,717,700 to Crouch et al.

U.S. Pat No. 6,081,916 to Whetsel, Jr.

U.S. Pat No. 6,148,425 to Bhawmik et al.

U.S. Pat No. 6,467,044 to Lackey

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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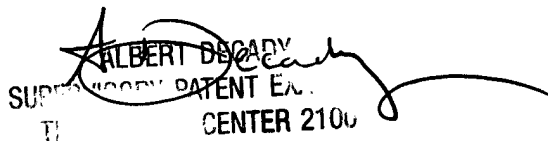
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anthony T Whittington whose telephone number is 703-306-5617. The examiner can normally be reached on Monday-Friday 7:30a.m.-4:00p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Albert Decady can be reached on 703-305-9595. The fax phone numbers for the organization where this application or proceeding is assigned are 703-746-7239 for regular communications and 703-746-7238 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.



A.W.
June 18, 2003



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